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EXAMINER

PATEL, DHAIRYA A

ART UNIT PAPER NUMBER

2151

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/918,032	TORMASOV ET AL.	
	Examiner	Art Unit	
	Dhairya A Patel	2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-69 is/are pending in the application.
- 4a) Of the above claim(s) 1-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/5/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Application # 09/918,032 was filed on 7/30/2001. Claims 1-69 are subject to examination.
2. Claims 1-25 are cancelled by the preliminary amendment filed on 7/8/2004.
Claims 26-69 were added by the preliminary amendment filed on 7/8/2004.
Therefore, Claims 26-69 are considered for examination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

1. Claims 26-30,32,66-68 are rejected under 35 U.S.C. 102(e) as being anticipated by Boykin et al. U.S. Patent Publication # 2002/0078461 (hereinafter Boykin).

As per claim 26, Boykin teaches a system for distributed file storage comprising:

-a plurality of servers providing, to a plurality of clients, file access services for

accessing files stored on the plurality on server (Fig. 2)(Paragraph 27 lines 1-12)
(Paragraph 35 lines 1-30); and

The reference teaches plurality of servers, clients providing accessing and downloading files stored on the servers.

-a list of neighbor servers maintained by each server, wherein the neighbor servers are a subnet of the plurality of servers (Paragraph 32)(Paragraph 33)(Paragraph 36),

The reference teaches servers containing list of the files stored on all the servers and which are available which proves that each server has knowledge of the files stored on the neighboring servers (a list of neighbor servers maintained by each server) therefore a list maintained by listing all the servers including neighbor servers consisting the files.

-wherein the files are divided into a plurality of pieces stored on the plurality of servers (Paragraph 29), and

The reference teaches video program (files) are divided into plurality of pieces (fig.2) and distributed over the disks, which are connected to the server computers.

-wherein the list is used to obtain information for reconstructing files stored on the neighbor servers (Paragraph 36).

The reference teaches using the list to piece together fragments of the files obtained from the multiple target servers (obtained information for reconstructing files stored on the neighbor servers)

As per claim 27, Boykin teaches the system of claim 26, wherein the servers use

a peer-to-peer network for communication with each other. (Fig. 4)(Paragraph 30)

The reference teaches host can act either as a server or client so since in peer-to-peer network a peer (server/client) can act as server/client, therefore servers in the reference can be considered as peers communicating with each other in a network making it a peer-to-peer network.

As per claim 28, Boykin teaches the system of claim 26, wherein the files are stored using a peer-to-peer network. (Paragraph 29)(Paragraph 30)

The reference teaches a peers communicating with each other in a network making it a peer-to-peer network, it also teaches server storing the pieces of the files using the network as stated in claim 27 above.

As per claim 29, Boykin teaches the system of claim 26, wherein the servers are functionally equivalent (Paragraph 27).

The reference teaches server computer (2a,b, c) have the same functions making it functionally equivalent.

As per claim 30, Boykin teaches the system of claim 26, wherein at least one of other servers is a logical sever that includes a plurality of physical servers connected via a network (Paragraph 27).

The reference teaches a video server (logical server) which includes plurality of servers connected via a network.

As per claim 32, Boykin teaches the system of claim 26, wherein none of the pieces is unique (Paragraph 29)(Fig. 2).

The reference teaches video program is stored as if data was striped where data

has been divided and distributed over the plurality of magnetic disk, which are connected to the servers (Fig.2).

As per claim 66, Boykin teaches a system for organizing distributed file storage comprising:

- a plurality of functionally equivalent servers (Paragraph 27) each providing file access services, for a plurality of clients, to files stored on the servers (Paragraph 27 lines 1-12) (Paragraph 35 lines 1-30); and

The reference teaches plurality of equivalent servers, clients providing accessing and downloading files stored on the servers. The reference also teaches server computer (2a,b, c) have the same functions.

- the files being divided into a plurality of pieces stored on the plurality of servers (Paragraph 29), and

The reference teaches video program (files) are divided into plurality of pieces (fig.2) and distributed over the disks, which are connected to the server computers.

- wherein information for reconstructing the files is obtained from the functionally equivalent servers (Paragraph 32)(Paragraph 33)(Paragraph 36),

As per claim 67, Boykin teaches the system of claim 66, further comprising a dynamic list of neighbor servers maintained by each server, wherein the neighbor servers are a subset of the plurality of servers (Paragraph 32)(Paragraph 33)(Paragraph 35),

The reference teaches servers containing list of the files stored on all the servers and which are available which proves that each server has knowledge of the files stored on the neighboring servers (a list of neighbor servers maintained by each server)

-wherein the dynamic list is used to obtain the information for reconstructing the files. (Paragraph 35).

The reference teaches using the dynamic list to piece together fragments of the files obtained from the multiple target servers (obtained information for reconstructing files)

As per claim 68, Boykin teaches the system of claim 66, further comprising a static list of neighbor servers maintained by each server, wherein the neighbor servers are a subset of the plurality of servers (Paragraph 32)(Paragraph 33)(Paragraph 36),

The reference teaches servers containing list of the files stored on all the servers and which are available which proves that each server has knowledge of the files stored on the neighboring servers (a static list of neighbor servers maintained by each server)

- wherein the static list is used to obtain the information for reconstructing the files. (Paragraph 36).

The reference teaches using the static list to piece together fragments of the files obtained from the multiple target servers (obtained information for reconstructing files).

The list is considered static since the list contains all the server on which the files are stored and the list is not going to change regardless even if the server is available or unavailable.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 31,33-56,69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boykin et al. U.S. Patent Publication # US 2002/0078461 (hereinafter Boykin) in view of Lahr et al. U.S. Patent Publication # 2002/0046405 (hereinafter Lahr).

As per claim 31, Boykin teaches the system of claim 26, but fails to teach wherein each server belongs to a group defined by its corresponding list, wherein a server that belongs to multiple groups maintains corresponding multiple list for each group to which it belongs, and wherein, upon receiving a request for a file, the server distributes the request to each of the multiple groups. Lahr teaches each server belongs to a group defined by its corresponding list (claim 1) wherein a server that belongs to multiple groups maintains corresponding multiple list for each group to which it belongs (claim 1,6) and wherein, upon receiving a request for a file, the server distributes the request to each of the multiple groups (claim 11,12,13).

The reference teaches each data server belongs to a group, which contains the list (claim 1) and first data server is adapted to serve said first data to plurality of second group which is a subset of first group (belongs to multiple groups) and the server sends a data request to the first data server group and the second data server group (distributes request to each of multiple groups).

It would have been obvious to one of ordinary skill in the art at the time of applicant's

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invention to implement Boykin's invention in Lahr's invention to come up with sever belonging to multiple groups and upon requesting for a file, server distributing the request to each of the multiple groups. The motivation for doing so would have been so that when a request for the files, which are divided in pieces comes, the server distributes the request to find out which group contains different pieces of the files.

As per claim 33, Boykin teaches a method for distributed file storage comprising:

- on each server, maintaining a list of neighbor servers belonging to the same group (Paragraph 32)(Paragraph 33)(Paragraph 36),

The reference teaches servers containing list of the files stored on all the servers and which are available which proves that each server has knowledge of the files stored on the neighboring servers (a list of neighbor servers maintained by each server)

- supporting file access services on each of the servers (Paragraph 27 lines 1-12) (Paragraph 35 lines 1-30);

The reference teaches plurality of servers, clients providing accessing and downloading files stored on the servers

- dividing a file into plurality of pieces that are derived from the file (Paragraph 29); and

The reference teaches video program (files) are divided into pieces and distributed over the disks which are connected to the server computers.

- storing each of the pieces on servers selected from the list (Paragraph 29) (Paragraph 32)

Boykin fails to teach dividing a plurality of servers into a plurality of groups, with

each server belonging to at least one group. Lahr teaches dividing plurality of servers into a plurality of groups, with each server belonging to at least one group (Claim 1)

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to implement Boykin's invention in Lahr's invention to come up with dividing servers into plurality of groups with each server belonging to at least one group. The motivation for doing so would have been to because it would have been easier to track which group of servers has which pieces of the divided files. Therefore in order to search for a piece of file, a search request would be sent out to each group in which each server would get the search request.

As per claim 34, Boykin and Lahr teaches the method of claim 33, but Boykin further teaches further comprising using a peer-to-peer network for communication between servers. (Fig. 4)(Paragraph 30)

The reference teaches host can act either as a server or client so since in peer-to-peer network a peer(server/client) can act as server/client, therefore servers in the reference can be considered as peers communicating with each other in a network making it a peer-to-peer network.

As per claim 35, Boykin and Lahr teaches the method of claim 33, but Boykin further teaches further comprising a peer-to-peer network for storing a file. (Paragraph 29)(Paragraph 30)

The reference teaches a peer communicating with each other in a network making it a peer-to-peer network, it also teaches server storing the pieces of the files using the network as stated in the claim 34.

As per claim 36, Boykin and Lahr teaches the system of claim 33, but Boykin further teaches further comprising maintaining functional equivalence among the servers (Paragraph 27).

The reference teaches server computers (2a,b, c) have the same functions equivalence among each other.

As per claim 37, Boykin and Lahr teaches the method of claim 33, but Boykin further teaches further comprising verifying availability of the neighbor servers (Paragraph 35)

The reference teaches availability of the eligible neighbor servers.

As per claim 38, Boykin and Lahr teaches the method of claim 33, but Boykin further teaches wherein the list is a dynamic list, and further comprising:

- polling the servers on the dynamic list of the neighbor servers and measuring a network metric for each server (Paragraph 35 lines 28-43)

The reference teaches using an adaptive incasting algorithm to virtually segment the file into number of distinct parts and requests each part from the servers (polling the servers). The procedure of virtually segmentation depends on the bandwidth available to the client and different servers, storage format of the file etc. (network metric) for each server.

- keeping each available server on the dynamic list in the same group (Paragraph 35 lines 25-27, lines 41-48)

The reference teaches having eligible servers (available server) for any download request on the list in the same group.

-removing unavailable servers from the dynamic list of the same group

(Paragraph 35 lines 25-27, lines 41-48)

The reference teaches removing the servers, which do not respond in pre-specified time will be dropped from the list (removing unavailable server from the list).

-switching at least one server of the plurality of servers into a neighbor group of servers if the measured network metric are better than a predetermined threshold (column 35 lines 41-48).

The reference teaches removing the servers which do not respond in pre-specified time (pre-determined threshold) will be dropped from the list (removing unavailable server from the list) and switching back to same server if other active servers are not fast enough from the pre-specified time used.

As per claim 39, Boykin and Lahr teaches the method of claim 38, but Boykin further teaches wherein better network connectivity is determined based on the network metric (column 35 lines 28-53).

The reference teaches connecting to the servers which responds faster than other servers that give the client an online estimate of the traffic and this scheme allows flexibility, which can be used to saturate the available bandwidth of the user.

As per claim 40, Boykin and Lahr teaches the method of claim 38, but Boykin further teaches further comprising:

-polling the dynamic list (Paragraph 35 lines 28-43)

The reference teaches using an adaptive incasting algorithm to virtually segment

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the file into number of distinct parts and requests each part from the servers (polling the server). The procedure of virtually segmentation depends on the bandwidth available to the client and different servers, storage format of the file etc. (network metric) for each server

- connecting a client to a server on the dynamic list (column 35 lines 41-59);

The reference teaches using the scheme mentioned downloading the file (connecting a client to a server).

- switching the client to a different server on the dynamic list that has a smaller workload or better network metric relative to the client (column 35 lines 41-59); and

The reference teaches removing the servers, which do not respond in pre-specified time will be dropped from the list (removing unavailable server from the list) and switching back to other server if other active servers are not fast enough from the pre-specified time used (smaller workload or better network metric).

- delivering to the client a file requested by the client that is stored on the servers (column 35 lines 48-59).

The checking if the file request by the client has been downloaded. (delivering the file to the client)

As per claim 41, Boykin and Lahr teaches the method of claim 38, but Boykin further teaches further comprising:

- polling the dynamic list (Paragraph 35 lines 28-43)

The reference teaches using an adaptive incasting algorithm to virtually segment

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the file into number of distinct parts and requests each part from the servers (polling the server). The procedure of virtually segmentation depends on the bandwidth available to the client and different servers, storage format of the file etc. (network metric) for each server

- connecting a client to a server on the dynamic list (column 35 lines 41-59);

The reference teaches using the scheme mentioned downloading the file (connecting a client to a server).

- switching the client to a different server on the dynamic list that has a better network metric from a perspective of the client (column 35 lines 41-59); and

The reference teaches removing the servers, which do not respond in pre-specified time will be dropped from the list (removing unavailable server from the list) and switching back to server if other active servers are not fast enough from the pre-specified time used. This scheme allows complete flexibility and can be used to saturate the available bandwidth to the client (better network metric from a perspective of the client).

- delivering to the client a file requested by the client that is stored on the servers (column 35 lines 48-59).

The checking if the file request by the client has been downloaded. (delivering the file to the client).

As per claim 42, Boykin and Lahr teaches the method of claim 33, but Boykin further teaches wherein the list is a static list of servers (Paragraph 36).

The reference teaches a list containing a listing of all servers which contain the

pieces of the files of the same group regardless of if they are available or not. Therefore it is a static list because that list is not going to change.

As per claim 43, Boykin and Lahr teaches the method of claim 33, but Boykin fails to teach maintaining multiple lists for a server that belongs to multiple groups; and upon receiving a request for a file, distributing the request to servers selected from the multiple groups. Lahr teaches maintaining multiple lists for a server that belongs to multiple groups (claim 1,6); distributing the request to servers selected from the multiple groups (claim 11,12,13).

The reference teaches maintaining lists of both the second group of user which are subset of first groups (multiple groups) and distributing the request to the servers selected from the multiple groups.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to implement Boykin's invention in Lahr's invention to come up with maintaining list for a server belonging to multiple groups and upon requesting for a file, distributing the request to servers selected from multiple groups. The motivation for doing so would have been because there could be pieces of files stored on a server belonging to multiple groups or there could be sequential pieces of files on server which belongs on group A and on group B, so the client could retrieve the file from the multiple groups if the server on the multiple group contain the files mentioned in the request.

As per claim 44, Boykin and Lahr teaches the method of claim 33, but Boykin further teaches wherein none of the pieces is unique (Paragraph 29)(Fig. 2).

The reference teaches video program is stored as if data was striped where data

has been divided and distributed over the plurality of magnetic disk which are connected to the servers. (Fig.2)

As per claim 45, Boykin teaches a method of accessing files in a distributed file storage system comprising:

- supporting file access services on each of the servers for accessing a file stored on the servers (Paragraph 35 lines 1-30);

The reference teaches plurality of servers, clients providing accessing and downloading files stored on the servers

- at each server, maintaining a list of neighbor servers that belong to the same group (Paragraph 32)(Paragraph 33)(Paragraph 36),

The reference teaches servers containing list of the files stored on all the servers and which are available which proves that each server has knowledge of the files stored on the neighboring servers (a list of neighbor servers maintained by each server)

- generating plurality of pieces from the file; and (Paragraph 29); and

The reference teaches video program (files) are divided into pieces and distributed over the disks which are connected to the server computers

- distributing the plurality of pieces to the neighbor servers in the same group in order to achieve a desired fault tolerance level (Paragraph 29)(Paragraph 30) (Paragraph 32) (Fig. 2).

The reference teaches storing plurality of pieces to blocks units of the neighboring server in the same group (Fig. 2).

Boykin fails to teach dividing a plurality of servers into a plurality of groups, wherein each server belongs to at least one group. Lahr teaches dividing plurality of servers into a plurality of groups, with each server belonging to at least one group (Claim 1).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to implement Boykin's invention in Lahr's invention to come up with dividing servers into plurality of group with each server belonging to at least one group. The motivation for doing so would have been because it would have been easier to track which group of servers has which pieces of the divided files. Therefore in order to search for a piece of file, a search request would be sent out to each group in which each server would get the search request.

As per claim 46, it teaches same limitations as claim 34, therefore rejected under same basis.

As per claim 47, it teaches same limitations as claim 35, therefore rejected under same basis.

As per claim 48, Boykin and Lahr teaches the method of claim 45, but Boykin further teaches further comprising maintaining functional equivalence of the servers for purposes of storing the file. (Paragraph 27).

The reference teaches server computers (Fig. 2, element 2a,b, c) have the same functions equivalence among each other for storing the file.

As per claim 49, Boykin and Lahr teaches the method of claim 45, but Boykin

further teaches further comprising verifying availability of the neighbor servers (Paragraph 35).

The reference teaches availability of the eligible neighbor servers.

As per claim 50, Boykin and Lahr teaches a method of claim 45, but Boykin further teaches further comprising:

- polling the list of neighboring group servers and measuring a relative network metric for each client-server pair; (Paragraph 35 lines 28-43)

The reference teaches using an adaptive incasting algorithm to virtually segment the file into number of distinct parts and requests each part from the servers (polling the server). The procedure of virtually segmentation depends on the bandwidth available to the client and different servers, storage format of the file etc. (network metric) for each server-client because it depends on the bandwidth available to each client and server.

- connecting a client to any of the servers on the list using the measured metric; (column 35 lines 41-59);

The reference teaches using the scheme which measures the metric (measured metric) mentioned downloading the file from the server (connecting a client to a server).

- switching the client to a server on the list that has a better relative network metric and a smaller workload to improve a level of service (column 35 lines 41-59); and

The reference teaches removing the servers which do not respond in pre-specified time will be dropped from the list (removing unavailable server from the list) and switching back to other server which has higher available bandwidth and will responds faster if

other active servers are not fast enough from the pre-specified time used (better relative metric and smaller workload).

-delivering, to the client, the file requested by the client (column 35 lines 48-59).

The checking if the file request by the client has been downloaded. (delivering the file to the client).

As per claim 51, Boykin and Lahr teaches the method of claim 50, but Boykin further teaches wherein the better relative network metric is determined based on network distance (column 35 lines 28-64).

The reference teaches connecting to the servers, which responds faster than other servers, which give the client and online estimate of the traffic and the network distance because distance is also used to estimate the traffic.

As per claim 52, Boykin and Lahr teaches the method of claim 45, but Boykin further teaches further comprising:

-polling servers on the list that belong to the same group (Paragraph 35 lines 28-43);

The reference teaches using an adaptive incasting algorithm to virtually segment the file into number of distinct parts and request each part from the server. The procedure of virtually segmentation depends on the bandwidth available to the client and different servers, storage format of the file etc. (network metric)

-connecting a client to any of the servers on the list that belong to the same group; (column 35 lines 41-59);

The reference teaches using the scheme, which measures the metric, (measured metric) and downloading the file from the server (connecting a client to a server) from the list of the same group.

-switching the client to a server on the list that has a smaller workload (column 35 lines 41-59); and

The reference teaches removing the servers which do not respond in pre-specified time will be dropped from the list (removing unavailable server from the list) and switching back to other server which has higher available bandwidth and will responds faster if other active servers are not fast enough from the pre-specified time used (smaller workload).

-delivering, to the client, the file that is requested by the client (column 35 lines 48-59).

The checking if the file request by the client has been downloaded. (delivering the file to the client).

As per claim 53, Boykin and Lahr teaches the method of claim 52, but Boykin further teaches further comprising:

-identifying a name of the file in namespace (Fig. 6 element "File ID", "File Attributes", "Server's IP addresses/Information") (Paragraph 35 lines 1-24)(Paragraph 36);

The reference teaches having "file ID" which states the file name and also having identification tags of all the content i.e. for each content/file.

-sending a request for the file from the client to the server to which the client is

connected (Paragraph 35 lines 1-27);

- sending a request for the file from the server to which the client is connected to a neighbor server (Paragraph 35 lines 1-27);

- distributing the request to other servers if the server to which the client is connected cannot provide the file pieces information (Paragraph 35 lines 28-41) ;

- checking for file pieces in a local cache of each server that received the request (Paragraph 35);

- sending the pieces to the server to which the client is connected (Paragraph 29);

- transferring the pieces to the client (Paragraph 35 lines 49-64); and

- assembling the file on the client (Paragraph 36).

As per claim 54, Boykin and Lahr teaches the method of claim 52, but Boykin further teaches further comprising sending all the pieces from the neighbor servers to the server to which the client is connected simultaneously. (Paragraph 35)

As per claim 55, it teaches same limitations as claim 42, therefore rejected under same basis.

As per claim 56, it teaches same limitation as claim 44, therefore rejected under same basis.

As per claim 69, Boykin teaches a computer program product for distributed file storage, the computer program product comprising a computer useable medium having computer program logic recorded thereon for controlling a processor, the computer program comprising:

-on each server, computer program code means for maintaining a list of neighbor servers belonging to the same group; (Paragraph 32)(Paragraph 33)(Paragraph 36),

The reference teaches servers containing list of the files stored on all the servers and which are available which proves that each server has knowledge of the files stored on the neighboring servers (a list of neighbor servers maintained by each server)

-computer program code means for supporting file access services on each of the servers (Paragraph 27 lines 1-12) (Paragraph 35 lines 1-30);

The reference teaches plurality of servers, clients providing accessing and downloading files stored on the servers.

-computer program code means for dividing a file into a plurality of pieces that are derived from the file (Paragraph 29); and

The reference teaches video program (files) are divided into pieces and distributed over the disks which are connected to the server computers.

-computer program code means for storing each of the pieces on servers selected from the list (Paragraph 29) (Paragraph 32).

Boykin fails to teach computer program code means for dividing a plurality of servers into a plurality of groups, with each server belonging to at least one group. Lahr teaches dividing plurality of servers into a plurality of groups, with each server belonging to at least one group (Claim 1)

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to implement Boykin's invention in Lahr's invention to come up with dividing servers into plurality of group with each server belonging to at least one group.

The motivation for doing so would have been because it would have been easier to track which group of servers has which pieces of the divided files. Therefore in order to search for a piece of file, a search request would be sent out to each group in which each server would get the search request.

3. Claims 57-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boykin et al. U.S. Patent Publication # US 2002/0078461 (hereinafter Boykin) in view of Lahr et al. U.S. Patent Publication # 2002/0046405 (hereinafter Lahr) further in view of Rao et al. U.S. Patent # 6,078,929 (hereinafter Rao).

As per claim 57, Boykin teaches a method of naming files in a distributed file storage system comprising:

- dividing a plurality of servers into a plurality of groups such that each server belongs to at least one group;

- supporting file access services on each of the servers for accessing files stored on the servers (Paragraph 35 lines 1-30);

The reference teaches plurality of servers, clients providing accessing and downloading files stored on the servers.

- accessing the files using the file access services from any of servers (Paragraph 35 lines 1-30).

The reference downloading the files (accessing) from any of the servers from the list.

Boykin fails to teach dividing a plurality of servers into a plurality of groups, such that each server belongs to at least one group. Lahr teaches dividing plurality of servers

into a plurality of groups, such that each server belonging to at least one group (Claim 1).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to implement Boykin's invention in Lahr's invention to come up with dividing servers into plurality of group with each server belonging to at least one group. The motivation for doing so would have been because it would have been easier to track which group of servers has which pieces of the divided files. Therefore in order to search for a piece of file, a search request would be sent out to each group in which each server would get the search request.

Boykin and Lahr fails to teach giving file names for the files uniformly and independent of location of the files on the servers and storing the files on the servers using the names. Rao teaches giving file names for the files uniformly and independent of location of the files on the servers and storing the files on the servers using the names. (Paragraph 3 lines 27-45)

The reference teaches naming a URL names of the file and mounting it on the local file system using the (naming the file on the servers and storing them on the servers using the name).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to implement Boykin and Lahr's invention in Rao's invention's to come up with naming the files independent of the location of the files on the servers and storing the files on the servers using the names. The motivation for doing so would

have been when a user wants to access in the future it could use the file name as starting point to look for the file and access it.

As per claim 58, it teaches same limitations as claim 34, therefore rejected under same basis.

As per claim 59, Boykin, Lahr and Rao teaches the method of claim 57, but Boykin further teaches further comprising maintaining functional equivalence of the servers. (Paragraph 27).

The reference teaches server computers (Fig. 2, element 2a,b, c) have the same functions equivalence among each other for storing the file.

As per claim 60, Boykin, Lahr and Rao teaches the method of claim 57, but Boykin further teaches further comprising verifying availability of the neighbor servers (Paragraph 35).

The reference teaches availability of the eligible neighbor servers.

As per claim 61, Boykin, Lahr and Rao teaches the method of claim 57, but Boykin further teaches further comprising:

- on each server, maintaining a dynamic list of the neighbor servers in the same group (Paragraph 32)(Paragraph 33)(Paragraph 36),

The reference teaches servers containing list of the files stored on all the servers and which are available which proves that each server has knowledge of the files stored on the neighboring servers (a dynamic list of neighbor servers maintained by each server)

- polling servers on the dynamic list (Paragraph 35 lines 28-43);

The reference teaches using an adaptive incasting algorithm to virtually segment the file into number of distinct parts and request each part from the server. The procedure of virtually segmentation depends on the bandwidth available to the client and different servers, storage format of the file etc. (network metric) for each server

-connecting a client to any of the servers on the dynamic list (column 35 lines 41-59);

The reference teaches using the scheme mentioned downloading the file (connecting a client to a server).

-switching the client to a server on the dynamic list that has better network metric to improve level of service (column 35 lines 41-59); and

The reference teaches removing the servers which do not respond in pre-specified time will be dropped from the list (removing unavailable server from the list) and switching back to other server which has higher available bandwidth and will responds faster if other active servers are not fast enough from the pre-specified time used (better relative metric).

-delivering to the client a file requested by the client that is stored on the servers (column 35 lines 48-59).

The checking if the file request by the client has been downloaded. (delivering the file to the client)

As per claim 62, Boykin, Lahr and Rao teaches the method of claim 61, but Boykin further teaches wherein the better network metric is determined based on network distance. (column 35 lines 28-64).

The reference teaches connecting to the servers, which responds faster than other servers, which give the client an online estimate of the traffic and the network distance because distance is also used to estimate the traffic.

As per claim 63, Boykin, Lahr and Rao teaches the method of claim 57, but Boykin further teaches further comprising:

- on each server, maintaining a dynamic list of neighbor servers (Paragraph 32)(Paragraph 33)(Paragraph 36),

The reference teaches servers containing list of the files stored on all the servers and which are available which proves that each server has knowledge of the files stored on the neighboring servers (a dynamic list of neighbor servers maintained by each server)

- polling servers on the dynamic list that belong to the same group (Paragraph 35 lines 28-43);

The reference teaches using an adaptive incasting algorithm to virtually segment the file into number of distinct parts and request each part from the server. The procedure of virtually segmentation depends on the bandwidth available to the client and different servers, storage format of the file etc. (network metric) for each server

- connecting a client to any of the servers on the dynamic list;(column 35 lines 41-59);

The reference teaches using the scheme mentioned downloading the file from the server (connecting a client to a server).

-switching the client to a server on the dynamic list that has a smaller workload (column 35 lines 41-59); and

The reference teaches removing the servers which do not respond in pre-specified time will be dropped from the list (removing unavailable server from the list) and switching back to other server which has higher available bandwidth and will responds faster if other active servers are not fast enough from the pre-specified time used (smaller workload).

-delivering to the client a file requested by the client that is stored on the servers (column 35 lines 48-59).

The checking if the file request by the client has been downloaded (delivering the file to the client).

As per claim 64, Boykin, Lahr, and Rao teaches the method of claim 57 furthermore Boykin teaches maintaining data files and directory files to be stored in the distributed file storage system (Paragraph 29)(Paragraph 35 lines 1-14).

The reference teaches storing the video program content files in the magnetic disk which are part of the distributed file storage system. The reference also teaches the video program content files are data files and directory files.

Boykin and Lahr fails to teach maintaining a uniform name space as a tree with a common root and a logical path to each stored file as part of the distributed file storage system. Rao teaches a uniform name space as a tree with a common root and a logical path to each stored file as part of the distributed file storage system (Fig. 3) (column 5 lines 13-44)

The reference teaches maintaining a namespace as a tree (Fig. 3) with a “/home” (common root) and a “/home/bob/IFS” (logical path to store file) of the distributed file system.

It would have been obvious to one ordinary skill in the art at the time of applicant's invention to implement Boykin and Lahr's invention in Rao's invention to come up with maintaining a uniform name space tree and having a logical path to each stored file. The motivation for doing so would have been because the user known the exact location of the file and user who is the owner is the only one to access the file on a particular path.

As per claim 65, Boykin, Lahr and Rao teaches the method of claim 64, furthermore Boykin teaches:

- maintaining the directory files as executable files with their own executable code and data (Paragraph 29)(Paragraph 35 lines 1-14)

The reference teaches the video program denoted by video is mentioned as directory files (Paragraph 35 lines 1-10)(directory files) are also executable files with own executable code and data since it is a video program which run using the executable code and data.

Boykin and Lahr fail to teach providing translation from a logical path inside the uniform name space to a unique file identifier using the directory files. Rao teaches providing translation from a logical path inside the uniform name space to a unique file identifier using the directory files. (Fig. 3)(Column 5 lines 13-24)(column 5 lines 36-56)

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It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to implement Boykin and Lahr's invention in Rao's invention to come up with providing translation from logical path to unique file identifier. The motivation for doing so would have been to access the file identifier, which can be done by using the translation from a logical path.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) "Incasting for download files on distributed networks" by Boykin et al. U.S. Patent Publication # 2002/0078461

B). "System and method for determining optimal server in a distributed network for serving content streams" by Lahr et al. U.S. Patent Publication # 2002/0046405

C). "Internet File System" by Rao et al. U.S. Patent # 6,078,929

5. A shortened statutory period for response to this action is set to expire **3 (three) months and 0 (zero) days** from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the applicant (see 35 U.S.C 133, M.P.E.P 710.02, 710.02(b)).

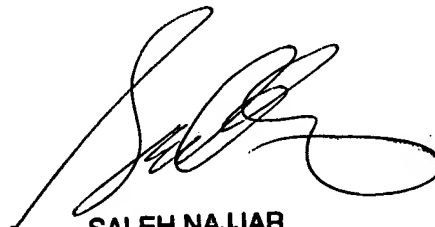
6.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dhairya A Patel whose telephone number is (571) 272-4066. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarni Maung can be reached on (571) 272-3939. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DAP



SALEH NAJJAR
PRIMARY EXAMINER